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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,499	04/15/2004	Masaki Katagiri	1458.00046	6570
22907	7590	12/22/2004	EXAMINER	
BANNER & WITCOFF 1001 G STREET N W SUITE 1100 WASHINGTON, DC 20001			HANNAHER, CONSTANTINE	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 12/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/824,499

Applicant(s)

KATAGIRI, MASAKI

Examiner

Constantine Hannaher

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 13 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 2 and 5 is/are allowed.
- 6) ☒ Claim(s) 3, 4, 6-9, 13 and 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either on an application data sheet or supplemental oath or declaration.

It does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

The postal code for the Tokai Research Establishment is conspicuously absent. Note that the name of a prefecture is NOT acceptable as the city of residence.

Claim Objections

2. Claims 17, 13, 19, 16, and 18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim limitations recited by claims 17, 13, 19, 16, and 18 are found in claims 8 and 9.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 13, 19, 16, 18, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13, 19, 16, and 18 depend upon one of claims 10 and 12 both of which are cancelled.

A claim which claims both an apparatus and method steps of using the apparatus is indefinite. *Ex parte Lyell*, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990). Claim 20 recites a two-dimensional neutron (or radiation) image detector and a method of use.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claim 20 is rejected under 35 U.S.C. 101 because the claim 20 is directed to neither a "process" nor a "machine," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. *Ex parte Lyell*, 17 USPQ2d 1548, 1551 (Bd. Pat. App. & Inter. 1990). Claim 20 recites a two-dimensional neutron (or radiation) image detector and a method of use.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schreiner *et al.* (US006563121B1) in view of Sealock *et al.* (US005783829A) and DiFilippo (US006078052A) and Fujii (US005313064A).

With respect to independent claim 3 and dependent claim 6, Schreiner *et al.* discloses a two-dimensional radiation image detector (Fig. 2) comprising a scintillator sheet **18** in which the top surface has grooves **24** cut at predetermined spacings in a horizontal and a vertical direction to a depth at least one half the thickness of the scintillator sheet (because 10 mm is at least one half of 1.9 cm, see column 3, lines 8 and 15) and a fluorescence reflector buried in the grooves **24** (column 5, line 10) to form a group of pixels **26**. However, Sealock *et al.* teaches that optical fibers placed in grooves cut into the top surface of a scintillator sheet (Fig. 9) offers excellent position resolution at a high rate. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector of Schreiner *et al.* to replace some of the buried reflector with buried optical fibers as suggested by Sealock *et al.* Additional optical fiber bundles arranged on top or bottom or both surfaces of the scintillator sheet are suggested by DiFilippo in view of the additional capture of scintillations thereby, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector suggested by Schreiner *et al.* and Sealock *et al.* to comprise further optical fiber bundles on such surfaces. The placement and arrangement of the optical fiber bundles are choices within the ordinary skill in the art in view of the desired performance. It is known in the art of detecting radiation by scintillation that a fluorescence collecting sheet of quartz glass is a known substitute for the scintillation crystals and scintillation materials disclosed by Schreiner *et al.* See column 2, lines 8-23, of Fujii. An express suggestion to substitute one equivalent component or process for another is not necessary to render such a substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). MPEP § 2144.06.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination suggested by Schreiner *et al.*, Sealock *et al.*, and DiFilippo to substitute a fluorescence collecting sheet of quartz glass as suggested by Fujii for the scintillation crystal and materials disclosed by Schreiner *et al.*

9. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schreiner *et al.* (US006563121B1) in view of Sealock *et al.* (US005783829A) and DiFilippo (US006078052A) and Simonetti (US004713198A).

With respect to independent claim 4 and dependent claim 7, Schreiner *et al.* discloses a two-dimensional radiation image detector (Fig. 2) comprising a scintillator sheet 18 in which the top surface has grooves 24 cut at predetermined spacings in a horizontal and a vertical direction to a depth at least one half the thickness of the scintillator sheet (because 10 mm is at least one half of 1.9 cm, see column 3, lines 8 and 15) and a fluorescence reflector buried in the grooves 24 (column 5, line 10) to form a group of pixels 26. However, Sealock *et al.* teaches that optical fibers placed in grooves cut into the top surface of a scintillator sheet (Fig. 9) offers excellent position resolution at a high rate. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector of Schreiner *et al.* to replace some of the buried reflector with buried optical fibers as suggested by Sealock *et al.* Additional optical fiber bundles arranged on top or bottom or both surfaces of the scintillator sheet are suggested by DiFilippo in view of the additional capture of scintillations thereby, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector suggested by Schreiner *et al.* and Sealock *et al.* to comprise further optical fiber bundles on such surfaces. The placement and arrangement of the optical fiber bundles are choices within the ordinary skill in the art in view of the desired performance. It is known in the art of detecting radiation by scintillation that a plastic

wavelength shifter sheet is an organic scintillator of the type disclosed by Schreiner *et al.* See column 1, lines 18-35, of Simonetti. See also especially column 4, lines 42-51 for the wavelength shifter component. In view of the high performance of the plastic wavelength shifting sheet disclosed by Simonetti (column 3, lines 4-18) in detecting scintillation from radiation detecting mediums (column 3, lines 29-44), it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination suggested by Schreiner *et al.*, Sealock *et al.*, and DiFilippo to substitute a plastic wavelength shifter sheet as suggested by Simonetti for the scintillation crystal and materials disclosed by Schreiner *et al.*

10. Claims 8, 17, and 20/8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madono *et al.* (US006066851A) in view of Katagiri (JP2000187077A) and Koshishiba (JP 3-29256 A).

With respect to independent claim 8, Madono *et al.* discloses a two-dimensional radiation image detector (Fig. 7) comprising a liquid scintillator **230** and a white plastic block **231** which acts as a reflector block (column 7, lines 64-66). The block **231** is divided into a grid pattern of cells. Although the block **231** in the detector of Madono *et al.* is not placed in a detection vessel capable of sealing off the liquid scintillator **230**, the enclosure of liquid scintillator within a vessel is known from Katagiri and in view of the need to enclose the liquid scintillator (as acknowledged by Madono *et al.* in providing cap **232** or individual alternatives) it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector of Madono *et al.* to place block **231** in a detection vessel filled with liquid scintillator. The placement of optical fiber bundles is also shown in Katagiri, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector of Madono *et al.* to comprise such optical fiber bundles in view of the utility in directing light from the scintillator **230** to a detector. While neither

Madono *et al.* nor Katagiri appear to describe any circulating mechanism for the liquid scintillator, Koshishiba teaches that a liquid scintillator which is kept new by a circulating mechanism improves response speed, service life, and gain. In view of these advantages as taught by Koshishiba, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detection vessel suggested by Madono *et al.* and Katagiri to be equipped with a liquid scintillator circulating mechanism comprising at least a pump **5** and piping **3** and valves as would have been necessary to prevent backflow to the tank **1** or premature leakage to pump **5**. Regarding the liquid scintillator, Katagiri identifies the recited elements several times (paragraph [0009], for example) and their utility for neutron conversion is too well known to require citation. In view of the increased utility of a radiation image detector that could detect neutrons, it would have been obvious to one of ordinary skill in the art to modify the liquid scintillator suggested by Madono *et al.* and Katagiri to include a neutron converter element therein.

With respect to dependent claim 17, see the explanation of the rejection against claim 8.

With respect to dependent claim 20/8, see Fig. **3** of Katagiri.

11. Claims 8, 13, 19, 16, 12, 18, and 20/9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katagiri (JP2000187077A) and further in view of Koshishiba (JP 3-29256 A).

With respect to independent claim 9, see Fig. **7** of Katagiri. While Katagiri does not appear to describe any circulating mechanism for the liquid scintillator, Koshishiba teaches that a liquid scintillator which is kept new by a circulating mechanism improves response speed, service life, and gain. In view of these advantages as taught by Koshishiba, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detection vessel disclosed by Katagiri to be equipped with a liquid scintillator circulating mechanism comprising at least a pump **5** and piping **3** and valves as would have been necessary to prevent backflow to the tank **1** or

premature leakage to pump 5. Katagiri identifies the recited elements several times (paragraph [0009], for example) and their utility for neutron conversion is too well known to require citation. In view of the increased utility of a radiation image detector that could detect neutrons, it would have been obvious to one of ordinary skill in the art to modify the liquid scintillator disclosed by Katagiri to include a neutron converter element therein.

With respect to dependent claims 13, 19, 16, and 18, see the explanation of the rejection against claim 9.

With respect to dependent claim 20/9, see Fig. 3 of Katagiri.

Response to Submission(s)

12. This application has been published as US2004/0188629A1 on September 30, 2004.
13. The amendment filed November 15, 2004 has been entered.
14. Applicant's arguments filed November 15, 2004 have been fully considered but they are not persuasive.

The requirement to identify the application by application number and filing date is upon the *new* oath or declaration as the objection makes clear. This form paragraph has been in use substantially unchanged for at least 19 years (appearing in the second edition of the Manual of Patent Examining Form Paragraphs of January 1985) and the examiner has been instructed to "call attention to the fact that the application of which it is to form a part must be properly identified in the body of the new oath or declaration" in requiring a new oath or declaration (MPEP § 602.02) since at least Revision 51 of the Third Edition dated January 1977. The contention that the current declaration has been objected to on the basis of not identifying this application is frivolous. As for the alleged completeness of the addresses supplied, attention is directed to pages 64 and 65 of the document found at <<http://www.uspto.gov/web/offices/pac/dapp/sir/doc/adsguidelines.pdf>>.

The "other claims of the application as originally filed" which support the new recitation regarding the fluorescence reflector are found in the parent application, not this application.

In response to applicant's argument based upon the age of the references, contentions that the reference patents are old are not impressive absent a showing that the art tried and failed to solve the same problem notwithstanding its presumed knowledge of the references. See *In re Wright*, 569 F.2d 1124, 193 USPQ 332 (CCPA 1977).

For at least the reasons explained above, Applicant is not entitled to a favorable determination of patentability in view of the arguments submitted November 15, 2004.

Allowable Subject Matter

15. Claims 1, 2, and 5 are allowed.

16. The following is a statement of reasons for the indication of allowable subject matter: with respect to independent claims 1 and 2, the recitation of neutron converting elements and radiation absorbing elements is completely ordinary, but the modification of the gamma cameras suggested by the combination of Schreiner *et al.*, Sealock *et al.*, and DiFilippo is not suggested.

17. No statement of allowability can be made for a claim rejected under 35 U.S.C. 101.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on

the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (571) 272-2437. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Constantine Hannaher
Primary Examiner